Goals
For the
AOC as a Weapon System

1.0 PURPOSE and OVERALL GOAL

The government seeks an industrial partner with proven, contemporary approaches to successfully integrate mission and infrastructure systems, developed and built by multiple contractors through multiple government organizations, onto a common service-based IT platform supporting the AOC mission. This integration must facilitate the evolution to an industrial strength, interoperable, modernized AOC mission infrastructure, consisting of *system-of-systems* that will be robust, agile, and maximizes mission capability within real-world constraints. Overall, this effort is intended to reduce the cross-program (both internal and external to the AOC) integration risks and expense between the individual programs.

This concept paper defines the top-level goals for the Lead System Integrator (LSI) for the Air Operations Center Weapon System (AOC WS) program. The AOC WS is constructed as an amalgamation of manyindependent systems and capabilities. As such, the individual elements composing an AOC are subject to many competing priorities; yet the Government seeks to balance AOC integration/modernization, AOC standardization, and AOC customization.

The Government desires the LSI to assist with plans and activities which:

- Carefully husbands limited resources (dollars, time, people);
- Applies AOC BM / C2 capabilities to emerging needs quickly (these include emerging potential conflict, new tactics, and doctrinal changes); and,
- Brings new battle management personnel up to war tempo quickly.

The government recognizes that the overall approach must take into account the business environment within which all the diverse, independent suppliers of capabilities found in the AOC operate. The Government desires to create an environment which is accepting of innovation, and creates collaborative opportunities among all suppliers.

Finally, the government wants to be able to determine whether we are making progress towards our goals. Therefore, adequate metrics indicating such progress is desired.

Below are listed additional and expanded goals.

2.0 GOALS

Integration/Modernization

2.1 Develop and implement an AOC that facilitates ease of information exchange in a Network Centric environment

It shouldn't matter where the "nodes", or the applications, or the data are physically, but the capabilities should be available wherever and whenever needed throughout the network. The AOC's capabilities must support Netcentric Operations, both within the AOC proper, and among external entities. Therefore the integration environment must support the technical underpinnings required.

An AOC is a key player in the joint and coalition conduct of military operations. It must be able to participate at all levels of conflict, and in all mission areas it is envisioned to be employed.

Questions should be directed to:

LtCol Laurie Carpentier, USAF
AOC-WS LSI Program Manager

Capt Brian Heaps, USAF
AOC-WS LSI Contracting Officer

The emerging operational joint doctrine is built around the concepts known as "Netcentric Warfare" and "Netcentric Operations." Key to these principles is the rapid movement of information to those in the need – essentially using the speed of information movement and the consequent rapid decision making as the force multiplier rather than mass alone.

A key tenet of Netcentric Operations is the concept of *self-synchronization* among the warfighting elements. This requires a shift in thinking from the traditional flow-oriented designs and architectures to an event-driven one. Operational elements respond to the emerging reality, reacting to events they receive.

2.2 Lower integration "touch time" required to achieve interoperable and integrated capabilities

The government desires that the integration environment be of such a design and structure that integration and interoperability itself will consume less resources and require less time. Modern commercial technologies, modern design approaches, and standards activities have lowered the barriers to integration. A prime example is the World Wide Web (WWW). A few key standards (http, html, the concept of "browsing") and common, shared semantics for information exchange caused a revolution in interoperability for human-interacting content (HTML-based). Nobody "integrates" the WWW. One can build their contribution "on the web" itself – whether in the internet or with the technologies which are found on the web. The job of "integration" is pushed back onto the new content offeror themselves. If you don't integrate, you don't play. It is self-enforced.

2.3 Lower barriers for entry and exit of businesses into the AOC BM/C2 "*market*"

Innovation is sparked by the competition of good ideas as applied to a given problem. To spark this competition, there must exist opportunities. Therefore, the business environment created through the integration environment the Government seeks must support the creation of opportunities for the competition of ideas, not reduce them. Conversely, there should be no indefinite tenure granted to current suppliers of functionality. Continued participation will be based on demonstrated value and fit. Additionally, the Government desires the ability to apply new, innovative business models – in many cases perhaps altering "contractor" business models to a "supplier" business models.

2.4 Leverage existing government investments, commercial technology, standards, and best practices to facilitate compatibility of AOC with current and future C2 and ISR platforms

The Government envisions the LSI will design and adopt processes, and build and sustain an integration environment, which will serve to leverage existing investments.

AOCs exist today. The rather diverse set of functionality exists because it serves an operational need. "Leveraging existing investments" covers two distinct areas: sunk investment as found in the systems which populate the AOC today; and new money, held and executed by other program offices in the service of their program goals.

The aggregate cost to replace all the capabilities in an AOC would be staggering, and it would likely reduce capabilities and reintroduce shortfalls that were uncovered and mitigated through the hard experience of fighting wars. Rather than wholesale replacement, harvesting elements found in the AOCs may provide a way to avoid relearning hard lessons. It may also provide a way to engage other programs and activities in partnerships that satisfy their business goals while moderating the financial burdens on the AOC Program Element by partnering with associated

programs where our goals line up, or by offering financial incentives to the other programs to adopt certain approaches, methods, or architectures.

Additionally, in the areas of fielding and sustainment there exist other contractual vehicles and trained personnel that form a discontinuous patchwork across the AOCs.

2.5 Minimize duplication of functionality and minimize functional gaps within the AOC

The government needs a process and methodology to evaluate and recommend divestiture as well as a process and methodology to prioritize application of resources towards filling functional gaps in the AOC.

2.6 Ensure the AOC is operationally efficient, scaleable for differing levels of conflict, and is continually improving

The AOCs are used at all levels of conflict, during periods of pre-conflict tension, in peacekeeping missions, and in all operations which air power is employed. The integration environment will support the assembly of capabilities that fit all known employment scenarios, and will quickly be re-assembled for new employment scenarios.

Integration/Modernization/Training

2.7 Increase the "value" of the AOC functionality as asserted by the users of the capability

Training is key to this goal. No matter how good the integration or how capable the functionality, if the user doesn't know how to fully take advantage of it, it's useless.

The LSI is anticipated to apply appropriate commercial technologies, standards, and practices to achieve the other goals envisioned.

Evolution and continuous improvement must be measured against the value of the end result. At the end of the day, the users of the capabilities determine the value of what is fielded.

Modernization/Standardization/Sustainment

2.8 Balance AOC modernization with AOC stability and sustainment

Operationally, one of the Government's goals is the reduction of the staff required to run an AOC. This implies modernization and change in the number and nature of the computing elements (HW and SW) that make up an AOC. As well, the commercial industry is constantly innovating in the areas of IT. These innovations have the potential to impact every aspect of the AOC. Concurrently, there is a desire to carefully modulate the introduction of change into an AOC so that change itself doesn't disrupt the operational missions the AOC is there to perform.

Investments should be steered towards long-lived AOC elements. It is anticipated that the LSI activities will support the establishment, structure and management of the "infostructure." Elements of the AOC environment have differing lifetimes. It is well established that it is the information, both structure and semantics, that has a relatively long lifetime. This is the case when compared to specific user-tools which support a specific role, in a specific workflow, for a specific purpose, rendered in a specific technology. These tools tend to have a shorter lifetime.

Questions should be directed to:

LtCol Laurie Carpentier, USAF
AOC-WS LSI Program Manager

Capt Brian Heaps, USAF
AOC-WS LSI Contracting Officer

Modernization

2.9 Infuse innovation in technology and operational methods leading to better speed and quality of capability fielding

Functional growth and evolution is predicated on the ability to infuse innovation. This includes innovation in technologies, innovation in the application of technologies, and innovation in the operational employment of AOC-resident functionality. Innovation is also found in, and can be harvested from, force experiments such as JFEX.

The integration environment created and supported by the LSI must be accepting and welcoming of innovation, and should anticipate participation in the integration and interoperability of the computing elements found at experiments such as JFEX. Additionally a goal of the corporate Air Force is movement to continuous experimentation.

2.10 Make it easy for all suppliers to collaboratively incorporate new functionality/capability into the AOC, balancing customization with standardization

The Government wants to be able to take advantage of innovation, regardless of the source, as quickly as possible and at minimal expenditure of resources.

The processes of the LSI must yield a balance between customization and standardization at each AOC. There is a constant struggle between the desire to reduce costs and unwanted surprises through standardization. Yet standardization often runs counter to the specific, tailored needs of a specific combatant commander. This balance must be struck for each current and proposed AOC.

Fielding

2.11 Provision the AOC Materiel to specific locations in four different configurations (Falconer, Functional, Training and Innovation, Training Suites)

The Government envisions the LSI to participate in the provisioning of AOC materiel. Regardless of the specific technologies and functionality which comprise an AOC; at the end of the day, the materiel must be purchased, assembled, configured, delivered, setup, tested, at the location where it will be used. Therefore, there must be ways to monitor, re-configure, troubleshoot, and offer assistance to the users of the AOC capabilities. Additionally, upgrades and technology refresh requires hands-on planning and actions.

Questions should be directed to:

LtCol Laurie Carpentier, USAF
AOC-WS LSI Program Manager

Capt Brian Heaps, USAF
AOC-WS LSI Contracting Officer